

Claims (original)

1. Method for generating electrical energy by means of a synchronous generator with a generator-stator with a stator winding and a generator rotor, movable relative to the stator, which comprises n poles and induces an electrical voltage in the stator winding, while a stator current flows through the stator winding, wherein the time behavior of the voltage induced in one or several stator windings essentially approximates the current time behavior in one stator winding or the sum of at least m component currents (11, 12).
2. Method of claim 1 wherein the stator contains a 6-phase stator winding, whereby every two phases form a phase pair, and the addition of the currents of a phase pair essentially matches to the time behavior of the voltage induced in the corresponding phase windings.
3. Method of one of the previous claims wherein the voltage induced in the stator essentially has a trapezoidal shape, which in a Fourier analysis contains a minimum of high-frequency components.
4. Method of one of the previous claims wherein the sum of N component currents ($N > 1$) in the stator windings yields a nearly constant direct current.
5. Synchronous generator for the implementation of the method of one of the previous claims, with one generator-stator (16) and a generator-rotor (12), movable relative to the stator (16), containing n poles (14), wherein the poles are designed asymmetrically or are positioned asymmetrically on the rotor (12).
6. Synchronous generator of claim 5 wherein the distance between poles (14) is not constant.
7. Synchronous generator of claim 6 wherein the poles (14) are arranged on the rotor (12) using three different pole distances.
8. Synchronous generator, in particular according to the introductory part of claim 5, wherein the poles (14) of the rotor (12) possess at least one leading edge (26) on the pole piece (20) that extends essentially obliquely with respect to the direction of motion (28) of the rotor (12).
9. Synchronous generator of claim 8 wherein

the edge (26) of a pole piece (20) that is leading with respect to the direction of motion (28) of the rotor (12) has two edge sections (32, 34) that are positioned at an angle with respect to each other and form a point (30).

10. Synchronous generator of claim 9 wherein the edge sections (32, 34) of the leading edge (26) are positioned at an angle of approximately 100° to 140° , preferably 120° , to the direction of motion (28) of the rotor (12).
11. Synchronous generator of claim 8 or 9 wherein the poles (14) of the rotor (12) have at least one trailing edge (24) on the pole piece (20) that extends essentially obliquely with respect to the direction of motion (28) of the rotor (12).
12. Synchronous generator of claim 11 wherein the trailing edge (24) has two edge sections (36, 38), positioned at an angle with respect to each other, that extend in parallel to the edge sections (32, 34) on the leading edge (26), so that the pole piece (20) is basically designed in the shape of an arrowhead if seen in a radial top view.
13. Synchronous generator, in particular according to one of the previous claims wherein the cross section of a pole piece (20) of a pole (14) has the shape of a trapezoid.
14. Synchronous generator of claim 13 wherein the cross section of the peripheral area of a pole piece (20) diminishes on both sides.
15. Synchronous generator of claim 13 wherein the edges (24, 26) of the trapezoid are rounded.
16. Wind power plant comprising a tower, a rotor arranged on this tower, as well as a generator (4) that can be driven by this rotor, wherein the generator is designed according to at least one of the previous claims.

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